Problem L. Random Permutation

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

An integer sequence with length n, denoted by $a_1, a_2, \cdots, a_n$, is generated randomly, and the probability of being $1, 2, \cdots, n$ are all $\frac{1}{n}$ for each a_i $(i = 1, 2, \cdots, n)$.

Your task is to calculate the expected number of permutations $p_1, p_2, \cdots, p_n$ from 1 to n such that $p_i \leq a_i$ holds for each $i = 1, 2, \cdots, n$.

Input

The only line contains an integer n $(1 \leq n \leq 50)$.

Output

Output the expected number of permutations satisfying the condition. Your answer is acceptable if its absolute or relative error does not exceed 10^{-9}.

Formally speaking, suppose that your output is x and the jury's answer is y. Your output is accepted if and only if $\frac{|x-y|}{\max(1,|y|)} \leq 10^{-9}$.

Examples

standard input
2
standard output
1.000000000000

standard input
3
standard output
1.333333333333

standard input
50
standard output
1041476627629413109078130252775840208480134 30.758061352192